

REMARKS

Reconsideration is respectfully requested in view of the following remarks.

Claims 1-4 and 6-17 have been canceled. Claim 20 has been added.

Independent method claim 5 has been amended to include a cylindrical can wall thickness between 0.0005 and 0.0035 inches. Claim 5 has been further amended to recite that prior to reverse drawing a portion of the hollow can, forming a flat sharp edge surface in a portion of the cylindrical wall, said flat edge surface being at an angle about perpendicular to the cylindrical wall.

Independent product claim 18 is directed to the can having a wall thickness of between about 0.0005 and 0.0035 inches and radiused side wall transition portion having a radius between about 0.020 and 0.024 mm has be allowed and is reproduced herein without amendment. (The "radius" of "radiused side wall transition portion" may be interpreted in light of the specification as radius "R" of radiused side wall transition portion 24 shown, for example, in Fig. 5A.)

Claim 19 originally dependent on claim 18 has been allowed. Claim 19 contains the added limitation that the ratio of the side wall transition radius "R" to the side wall thickness is approximately 33%. Claim 19 is presented herein in independent form including all of the limitations of claim 18.

Claims 8 and 9 were rejected under 35 USC 112 as being indefinite. These claims have been canceled rendering the rejection moot.

Claims 5-9, 12 and 13 were rejected under 35 USC 102(b) as being anticipated by Fields (U.S. 6,089,072). Claims 6-9; 12 and 13 have been canceled. Thus, the rejection applies only to remaining claim 5, now amended.

Applicant acknowledges that Fields (U.S. 6,089,072) discloses a method of reverse drawing a can wherein the end wall is pushed back partially through the side wall forming a recessed portion. Fields shows the interior recessed walls are tapered with the distance between these walls and the outer cylindrical walls being gradually decreased. Independent claim 5 has been amended to recite that the can wall thickness is between about 0.0005 and 0.0035 inches and that a flat sharp edge surface at about a perpendicular angle with the can wall is formed, before reverse drawing the can. Fields does not disclose these added features. Fields shows only a curved or convoluted edge during all stages of the can formation and not a sharp flat edge. Applicant indicates in the specification that the sharp edge 28 prevents wrinkling of the cylindrical wall 13.

(Specification p.13 bottom to p.14 top.) This feature (prevention of can wrinkling) is implicitly particularly associated with the thinned walled cans, since the method of the invention is shown to have particular utility in regards to forming very thinned walled can, e.g., cans having a wall thickness between about 0.0005 and 0.0035 inches. The use of thinned walled cans having a wall thickness between about 0.0005 and 0.0035 inches has now been incorporated in amended claim 5. Fields is not concerned with Applicants thin walled cans (wall thickness between 0.0005 and 0.0035 inches) and does not disclose or contemplate Applicant's "flat edge about perpendicular to the cylindrical wall". Thus, the rejection under 35 USC 102 is transversed. A reference under 35 USC 102 must disclose the claimed elements within its four corners. See, e.g. In re Marshall, 198 USPQ 344 (CCPA 1978). Withdrawal of the rejection of claim 5 under 35 USC 102 is requested.

Claim 5 as amended is also believed to be patentable under 35 USC 103. The cited references Hug (U.S. 6,447,947 B1) discloses a can wall thickness between 0.001 and 0.015 inches and Ferraro (U.S. 6,526,799 B2) discloses a casing wall thickness between about 0.003 and 0.015 inches. It will be appreciated that drawing a battery casing having very thin walls within Applicant's claimed range is far more difficult and challenging than drawing the battery casing having thin walls within more conventional thicknesses, e.g. between about 0.004 and 0.012 inches. Although Hug contemplates very thin wall can thicknesses within Applicant's range, this reference is not preoccupied with particular can drawing methods, since it is directed to other subject matter, namely can heat treatment. The drawing process in Ferraro is a transfer drawing process not a reverse drawing process. There is no reverse drawing step disclosed in Ferraro.

Fields as above does not contemplate Applicant's small wall thickness between about 0.0005 and 0.0035 inches. Although Fields discloses a reverse drawing method applied to can formation, it does not contemplate Applicant's flat edge surface 28 (Fig. 4) before the reverse drawing step, which Applicant has found to prevent wrinkling in drawing very thin walled can.

The reference Malay (U.S. 6,402,794 B1) discloses a reverse drawing process for forming a terminal end cap 132 for a cylindrical can. Malay's process is directed to formation of an outer cover 132, which has a shallow shape in the form of a metal cover or lid. In the context of the elongated battery can embodiments shown in all of his drawings, the cover or lid 132 would not be confused with a battery can. Tapered recessed inner walls are formed in the reverse drawing step during the formation of lid 132. A sharp flat edge is shown in Fig. 13B before the reverse drawing step. But it should be recognized that Malay's process is directed to formation of a lid or outer metal cover 132, not a battery can. Malay's outer cover 132 is

in the form of a lid for battery can 112. Malay's outer cover 132 would be expected to be thicker than battery can 112. In any event Malay does not disclose small wall thicknesses within Applicant's range of between about 0.0005 and 0.0035 inches for the metal piece being drawn into cover 132. With respect to formation of a battery can 112 itself, Malay does not disclose any reverse drawing method. There is nothing in either Fields, Huq, Ferraro or Mallay to indicate the desirability of combining the elements now recited claim 5, now amended to reflect the drawing of very thin walled cans. Accordingly, amended independent claim 5 is believed patentable under 35 USC 103.

Claims 5-9, 12 and 13 are rejected under 35 USC 102(e) as being anticipated by Malay (U.S. 6,402,794). Claims 6-9, 12 and 13 have been canceled. Thus, the rejection applies to remaining claim 5, now amended. Malay does not disclose Applicant's wall thickness range for the piece being drawn as now recited in amended claim 5. Accordingly, the rejection under 35 USC 102 is traversed, since a rejection under 35 USC 102 must show all of the claimed elements within its four corners.

Amended claim 5 is also believed to be patentable over Malay under 35 USC 103, since Malay is not concerned with drawing a battery can having a wall thickness between about 0.0005 and 0.0035 inches. Furthermore, it is believed that the depiction of outer metal cover 132 in the context of Malay's elongated cylindrical can embodiments is in fact a lid not a battery can. Therefore, the method described in Malay as applied to formation of cover 132 does not itself suggest application to fabrication of a battery can. In fact there is no specific teaching in Malay directed to applying his reverse drawing method to formation of a battery can. Malay drawings would not, per se, suggest forming a battery can absent specific teaching pertaining thereto. In any event Malay is not concerned with Applicant's small wall thicknesses between about 0.0005 and 0.0035 inches as recited in amended claim 5, as applied to the

battery can being drawn. Furthermore, there is nothing in either Fields, Malay, Hug or Ferraro viewed alone or in combination relating the desirability of combining the reverse drawing method, per se, with the remaining elements recited in Applicant's amended claim 5. Accordingly, amended claim 5 is believed patentable under 35 USC 103 over any of the above references whether viewed alone or in any combination.

The rejections of claims 1-4 and 14-17 under 35 USC 102 as being anticipated by either Hug or Ferraro is rendered moot as these claims have now been canceled.

Claims 10 and 11 are rejected under 35 USC 103(a) as being unpatentable over either Fields or Malay, each in view of Ringler (U.S. 3,581,691). Claim 10 and 11 depending from original claim 5 added the limitation of "trimming a portion of the cylindrical wall from said wall". Claim 11 included the step of turning the can over prior to said trimming. The Examiner states that Ringler teaches "in any can body, at least one end is irregular and requires trimming before a lid can be applied to the can body" (col. 1, lines 16-18). The Examiner indicates that turning the can over before trimming is an obvious expedient. Applicant has canceled claims 10 and 11 rendering the rejection moot as to claims 10 and 11. However, Applicant has entered new method claim 20 which contains all of the subject matter and limitations as recited in claim 5, but also includes the additional step of trimming at least a portion of the sharp flat edge from the cylindrical wall. Claim 20 reflects a specific embodiment of the completed casing, further restricting the method of claim 5, and should be allowed if amended claim 5 is allowed.

Claims 18 and 19 have been allowed. Claim 18 is represented herein without amendment. Claim 19 which was depended from claim 18 has been redrafted in independent form containing

all of the limitations of base claim 18. Thus, claim 19 should still be allowable.

Applicant has made every effort to amend the claims in view of the Examiner's bases for rejection and in a manner believed to place the application in condition for allowance. A formal allowance is solicited upon reconsideration.

The undersigned attorney solicits a telephone call from the Examiner to clarify any questions which the Examiner may have concerning the application. Authorization is hereby given to debit Deposit Account 502271 for any amount owing or credit the same account for any overcharges in connection with this communication.

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I certify that this correspondence is being deposited Oct. 28, 2003 with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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